Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	(supervisor with (forwards with call))	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 10:12
L2	0	(administrator with (forwards with call))	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 10:12
L3	61	(administrator with (assign$ with call))	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 10:21
L4	1	"6493695".pn. and administrator	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:14
L5	1	"6377944".pn. and supervisor	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 10:33
L6	554	(user with (search near2 engines))	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:25
L7	285	6 and 707/3	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:26
L8	13945	707/3 or 707/10 or 705/26 or 705/27	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:28
L9	282	8 and (search$ with (assistan$2 or expert$ or specialist))	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:27
L10	15296	707/3 or 707/10 or 705/26 or 705/27 or 707/104.1	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:28
L11	282	10 and 9	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:29
L12	0	11 and ((reformalate$ or amend$) with (input or request))	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:30

L13	0	11 and (voice near2 recongnization)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:31
L14	46	11 and (voice near2 recognition)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:31
L15	42	8 and (human near2 expert)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:32
L16	14	15 and (search$ same web)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:32
L17	9	8 and ((order$ same food) same online)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:33
L18	3572	707/104.1	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:34
L19	0	18 and (web near2 librarians)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:34
L20	0	18 and (librarians same (help or assist$))	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:35
L21	42	18 and ((user with (search near2 engines)) same internet)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:37
L22	7625	707/5 or 707/6 or 707/3	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:37
L23	336	22 and ((search near2 engines) with user)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:38
L24	11	23 and (search$ with assistance)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 11:49

L25	256	(search near2 engines) near4 user	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 12:06
L26	31	(user near2 select$) with (search near2 engines)	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2004/11/22 12:07

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Planning search strategies for maximum retrieval from bibliographic databases

Arthur L. Adams

Abstract: Methods for designing search strategies for maximum recall are discussed including minimizing the number of concepts intersected, isolating key subtopics, adapting the strategy to the database, and minimizing problems with search words and codes. Search results are analyzed to illustrate the effectiveness of these methods.

Introduction

Computerized literature searching is becoming a standard service in research libraries. Many times this tool is used when the goal is a comprehensive search retrieving as many useful titles from a database as is practical. These are sometimes called 'high recall' searches. There has been quite a bit of research on reasons for recall failure. This article illustrates how search strategies may be designed, taking into account the results of this research. Methods to make the search more efficient, such as anticipating ways to narrow or broaden the search, are also discussed.

The pre-search interview

The librarian and the client should discuss the client's needs in some detail before the search if at all possible. This frequently has a lot to do with achieving maximum recall [4,11]. Not only does the librarian need to understand the needs of the client, but the client should understand what the computer can and cannot do. Only then can the client provide the kind of information appropriate for a computer search and know what to expect of the results.

An important point to make is that the computer searches for words, not concepts. This should be obvious but is very often overlooked. People are used to having unambiguous handles on the information that the computer retrieves, such as a social security number or a bank account number. No one has been able to so conveniently code concepts for retrieval. All useful terminology including broad and specific terms may have to be used in the search.

For the concept 'chlorinated hydrocarbon pesticides' – 'chlorinated insecticide/s', 'chlorine pesticide/s', 'chlorine insecticide/s', 'organo-chlorine pesticide/s', 'organo-chlorine insecticide/s', and other variations may have to be entered into the terminal as well as 'DDT', 'dichloro diphenyl trichloro ethane', 'malathion', etc.

The client should also understand that

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'Research has shown that, almost invariably, as recall goes up, so does the percentage of irrelevant titles on the printout.'

irrelevant titles will be retrieved because search words appeared in contexts other than what was intended. It's not unusual for the majority of the titles on a printout to be irrelevant. In fact, research has shown that, almost invariably, as recall goes up, so does the percentage of irrelevant titles on the printout [5].

Most libraries seem to be averaging $15–$25 per search – roughly 15 minutes online and a printout of about 100 citations [8]. Searches will vary considerably, of course, but the searcher will want to keep the desired average in mind, so that it's not exceeded too often. The client should be asked if there is a cost ceiling to stay under if the library is charging for the service. This may affect how the search is prepared and carried out.

Once the client is briefed, the librarian needs to elicit exactly what is needed. The client usually describes his needs rather broadly, just as in the typical reference situation. The librarian needs to find out specifically what is most needed. This is especially important for a computer search. If specific topics aren't brought out, the specific terminology necessary to retrieve these topics may not be used in the search. In most cases, the more specific a topic is, the more the chance of success. This is because fewer search words will be needed to cover the concepts involved and they will usually be relatively unambiguous. Searching a broad topic is much more difficult.

Outlining the search strategy

During the interview, an outline of the search strategy will begin to take shape. The following discussion covers some of the elements of strategy formulation which result in more complete searches. These methods are important because computer searching is an attempt to retrieve concepts through the use of imperfect surrogates – words. A concept might be represented with many words and a word can mean different things in different contexts. If the words are from a controlled vocabulary, the problem is minimized but not eliminated. To compound the problem, the records in the database may not contain a surrogate for every concept in the text of the publication.

Minimize the number of intersections

Every concept that is a part of the topic as expressed by the client does not necessarily have to appear in the search strategy. First of all, certain kinds of concepts are very difficult to search. These include very broad ideas like 'economics', 'attitude', 'physiology', etc. If an attempt is made to include these in the search, recall will suffer. Second, leaving out concepts broadens the search. The topic 'discipline problems of hyperactive elementary school children' might be broadened to include all children. Hence, an article on pre-school children or junior high school students that could be useful to the client would be retrieved. In fact, the children concept might be left out altogether initially. For these reasons and the fact that some concepts in the text of a publication may not appear in the database record, it is important that the number of concepts intersected be minimized. These should be the essential or 'key concepts' – those that can be adequately represented by search words, that are likely to appear in a record, and that define the topic if only in a broad way. Intersecting or 'ANDing' too many concepts is one cause of search failure [2,4,5].

#3

'It is advisable to keep notes on the most used databases, summarizing information from manuals, newsletters, thesauri, and past experience.'

Carrying this logic further, the most important subtopic(s), if any, should be searched more broadly than the others. Some narrowing is usually necessary for practical reasons, but it should be done in a selective way. The researcher interested in "urea as a fertilizer for tomatoes" may want to look at other nitrogen fertilizers as well. If it becomes necessary to narrow this search, it would be wiser to work only on the second part. In this example the important keyword is indicated. (The vertical line separates concepts and represents the 'AND' operator. The terms within each concept are 'ORed'.)

tomato$	– urea$
	nitrogen$
	nitric
	nitrous
	nitrate$

When this search was done in Agricola, many articles were unexpectedly retrieved on the effects of air pollution on tomatoes, use of a nitrogen compound in processing, metabolism of nitrogen, etc. The fertilizer codes were then intersected with the nitrogen terms. The final strategy is represented below:

tomato$	urea$	
tomato$	nitrogen$	CC = 6010
	nitric	CC = 80
	nitrous	
	nitrate$	

The additional concept was not applied to the entire search but only where necessary. The most important part, the Urea-Tomato intersection, was left as simple as possible. Some useful titles in the results of this search were, in fact, missing the fertilizer codes and would have been lost had the codes been used in all parts of the search.

Adapt the strategy to the database

The number of access points in databases vary. Some contain only title words while others have titles, descriptors, concept codes, abstracts, etc. The choice of database will affect the design of the strategy. For a topic like 'the effect of soil pH on zinc uptake by legumes' to be searched in Agricola, a database consisting mainly of title words, it might be safest to use only the legume and zinc concepts. These are concepts that are likely to appear in a relevant title and are relatively easy to represent with words. The other concepts may be implied or could be represented by numerous other words [3,9]. For BIOSIS Previews, a database consisting of title words, key words from abstracts, and some broad but controlled concept codes, one might safely narrow the search further.

It is advisable to keep notes on the most used databases, summarizing information from manuals, newsletters, thesauri and past experience. These should include the exceptions to general practice that must be remembered to do effective searching as well as the basic characteristics that will effect strategy. That is, are abbreviations used?, did some codes not exist in the early part of the database?, is indexing reliable?, how many access points are there?, etc.

Anticipate methods for narrowing or broadening the search

Ideally, it would be preferable to use only the key concepts in a search. Unfortunately, this often results in too many hits. Some method for narrowing would have to be quickly applied in these cases. Occasionally a search will have to be broadened. It's essential for efficient searching that these steps be planned beforehand as much as possible.

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There are four common methods for narrowing a search:

(1) Restricting to English is simple to do when the client does not want to bother with foreign language titles. The other techniques all increase the chance of missing useful *English* language titles.

(2) Using the 'NOT' operator can be useful if a term or concept code frequently shows up in irrelevant items and if they are unlikely to appear in relevant ones [1,11].

(3) A concept may be restricted to a field such as title or descriptor. This last is frequently done in large and well-indexed databases like Medline. Of course, sometimes common sense will dictate that a concept should be represented by a descriptor from the beginning if postings are likely to be large.

(4) For the reasons discussed earlier, usually the least desirable method for narrowing is to intersect another concept. Problems with this method can be minimized when three or more concepts form a topic. Rather than 'ANDing' every concept, 'ORing' some might be considered. In the topic 'effect of soil pH on zinc uptake by legumes', there are five searchable concepts. If the legume/zinc intersection is too broad, the following strategy might narrow the search adequately:

Legumes	zinc	soil or pH or uptake

This should retrieve titles where some concepts were expressed by other than the search words or were simply missing altogether. It will pick up 'Soil and its effect on zinc uptake by legumes' (where pH is discussed in the article), or titles where the word for soil is different from what was used in the search or was missing, etc.

Frequently more than one of the techniques for narrowing are used in one search. The appropriateness of all these methods will vary with the topic and the database being used.

Restricting a search to several recent years – or printing just the first fifty or so items retrieved in a search – are two other frequently used techniques. It is strongly recommended that they not be used. It is very likely that useful material will be eliminated if they are. Knowledge of the other search refinement methods make these techniques unnecessary.

Broadening a search is relatively simple. Leaving out a concept or broadening one by using keywords as well as descriptors should be considered when very few hits are made. Spelling should be checked and the date when a descriptor or concept code was first used should be verified. Another database might be considered. Certain areas, especially the humanities and some social sciences, are not well covered by computerized sources.

Filling in the details

By this time an outline of the strategy including the key concepts and plans for narrowing or broadening the search will have been completed. The next step is to list useful search terms, codes, program commands, etc. that will actually be used in the search. This is a crucial step. Even in well-indexed databases it is frequently necessary to use both keywords and descriptors. This is especially important for searching new or inadequately indexed concepts. While important keywords should be included it is at least as important not to miss any useful descriptors or concept codes. Search guides and thesauri should be studied carefully. It will usually be up to the client to research the terminology of the field. Even someone familiar with the field should do some preliminary manual searching or scan some lists of references. (This is one reason why it is important to have a brochure distributed to potential clients. Besides advertising the service, it's essential that they know how to prepare.) The problems at this stage of strategy formulation become obvious when a bibliography on even the most specific topic is studied. There will usually be a remarkable variation in terminology. When doing a search on more than one database, and time is not too critical, it is useful to run the search on the 'best' database first, study the printout to pick up additional keywords, and then apply these to the other databases. This is also very helpful when formulating SDI's. Spelling variations, word endings, acronyms, symbols, and abbreviations should also be considered [7]. Lack of imagination at this stage of formulation is another major cause of search failure [2].

These are examples of preliminary strategies for the legume-zinc topic in two databases:

For Agricola:

*	*		
legum$	zinc	LG-EN	pH
Phaseolus$	ZN		acid$
bean$			alkalin$
Pisum$			soil$
pea			rhizo$
peas			uptak$
Trifolium$			accumulat$
clover$			
Glycine$			
soybean$			
soy adj bean$			
Arachis$			
peanut$			

For BIOSIS Previews:

*	*		
26260B	zinc	NOT-?	pH
	ZN		acid$
			alkalin$
			soil$
			rhizo$
			52801—07C
			uptak$
			accumulat$
			51520C

The key concepts will be intersected first (indicated by a '*'). Several alternatives for narrowing the searches have been planned and reflect the nature of the two databases being used. Neither database has descriptors, so these cannot be used. In the Agricola search, limiting to English might be preferable to any other method after the key concepts are intersected. In the BIOSIS search, using the NOT operator might be preferable to making another intersection but exactly what could be 'NOT-ed', if anything, cannot be known before the search.

Truncation is fairly liberal. This saves time by eliminating the typing of many word variations and also eliminates the time-wasting 'EXPANDING' 'NEIGHBOURING', or 'ROOTING' as scanning the index file is variously called. Last of all, program symbols to be used in the search are written down exactly as they are to be entered into the terminal. This is especially important for beginners.

Analysis

In order to illustrate the effectiveness of the search strategy examples, the legume and zinc concepts alone were intersected in each database and the results printed.

From Agricola there were 77 hits, of which 15 had probable relevance. Of these, nine contained a search word other than legume, etc. and zinc – the word 'soil'. Three of these contained an additional search word – 'uptake'. No titles explicitly mentioned all five concepts present in the request even though they were present in the texts of most articles. Terminology varied a great deal such as in "Snap bean response to zinc fertilization as influenced by lime", or "A fertilizer experiment with irrigated peas grown on calcareous subsoil, with emphasis on P phosphorous and ZN zinc". The broad strategy seems to be justified for this database.

From BIOSIS, 368 titles were retrieved by intersecting the legume and zinc concepts. Ninety-four of these were judged relevant. The 368 were then scanned for keywords or

codes present in irrelevant items to NOT from the search and for keywords or codes present in relevant items. There was much more consistency for keywords or codes present in relevant items than for those present in irrelevant ones. Hence, the NOT alternative was dropped and replaced by the intersection of the third group of keywords and codes. This strategy would have retrieved 158 items, of which 90 were relevant. Four relevant items would have been missed. Further analysis of the 90 relevant retrieved items showed that only four contained keywords or codes from the strategy representing all five concepts, 38 contained keywords or codes from the strategy from four concepts, and 48 contained keywords or codes from the strategy for only three concepts. This last group contained titles like: "Boron, calcium and zinc availability to tomatoes and beans as influenced by lime applications to latasols in Brazil", or "Effects of soil properties and amendments on the availability of zinc in soils" – both of probable value to the client. Since only four titles were missed by this strategy, the three-part intersection appears adequate. The reason for 'ORing' the concepts more difficult to retrieve in the third part of the strategy is well illustrated by the data.

This discussion is certainly not meant to set up 'rules' for bibliographic searching. This is something like establishing procedures for processing serials – there would be a lot of exceptions. The methods discussed will produce good results in most cases, however. Just as important as understanding the problems of strategy formulation are being familiar with the subject area, especially its terminology, and having an intimate knowledge of the databases and their print equivalents. Someone with this combination of skills will have the most success at computer searching. Librarians will continue to be called upon to make this tool work to its full potential for the foreseeable future [6,10].

About the author

Art Adams is a librarian at the Solar Energy Research Institute in Golden, Colorado. He received his bachelor's degree in biology at the University of Iowa, and his master's in Library Science from the University of Maryland. He has held positions at Western Carolina University and Auburn University. His current interests are innovation and change in libraries.

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Set     Items   Description
S1        699   SUBJECT(N)(EXPERT? OR SPECIALIST?) OR DEPARTMENTAL()LIBRARY
S2        480   (REFERENCE OR CLIENT OR USER OR CUSTOMER)(N)(REQUEST? OR Q-
            UERY OR QUERIES)
S3      48981   ROUT? OR REROUT? OR FORWARD? OR REFERRAL OR REFERRING OR A-
            SSIGN?
S4          1   S1 AND S2 AND S3
S5         21   S2 AND S3
S6         21   RD (unique items)
S7         66   S1 AND S3
S8         65   S7 NOT S6
S9         63   RD (unique items)
S10        53   S9 NOT PY>2000
S11        52   S10 NOT PD>20000801
S12        12   S11 AND (CENTRAL? OR SUPERVIS? OR CHIEF? OR HEAD?)
S13        13   REFERRALS AND TELEPHONE AND REFERENCE AND LIBRAR?
S14        13   S13 NOT (S11 OR S6)
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RECORD TYPE: ABSTRACT
COUNTRY OF PUBLICATION: U.S.; New York
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Digital reference services (also known as "AskA" services, as in "Ask-an-Expert") provide **subject expertise** and information **referral** over the Internet to their users. This ERIC Digest provides an overview of the growing digital reference movement and its implications on sponsoring organizations, and examines current practices in the creation and maintenance of such services. Following a brief definition of digital reference, discussion includes the evolution of digital reference; implications of these Internet-based question-and-answer services; how digital reference services work; and the six-step process of building and maintaining digital reference services. Includes a list of references and readings. (Author/AEF)

Easily accessible digital information has rapidly become one of the hallmarks of the Internet. Online resources have surged in popularity as more individuals and organizations have connected to the global network. Thousands of organizations have turned to Internet-based information delivery as an effective and cost-efficient alternative to traditional communication methods, and many have expanded their services further by interacting with their users and responding to inquiries via the Internet.

Digital reference services (also known as "AskA services," as in "Ask-an-Expert") provide **subject expertise** and information **referral** over the Internet to their users. This Digest provides an overview of the growing digital reference movement and its implications on sponsoring organizations, and examines current practices in the creation and maintenance of such services.

WHAT IS DIGITAL REFERENCE?
Digital reference and AskA services are Internet-based question-and-answer services that connect users with experts in a variety of subject areas. In addition to answering questions, experts may also provide users with referrals to other online and print sources of information. As opposed to traditional expert systems that attempt to capture and model problem-solving tasks in a manner similar to humans, digital reference services use human intermediaries, or experts, to answer questions and provide information to users. The question/answer process in digital

reference services is modeled after the methods practiced by reference librarians in traditional library settings. As in a face-to-face interview, experts determine the amount of information appropriate for the user, the applicability of that information, and the level of information required. **User queries** must occasionally be clarified, and an online reference interview may be conducted to help define the user's information needs.

HISTORY OF DIGITAL REFERENCE

The origins of digital reference can be traced to the library field, where libraries sought to augment traditional services by providing reference assistance in an electronic environment. One of the first services to go online was the Electronic Access to Reference Service (EARS), launched by the University of Maryland Health Services Library in Baltimore in 1984 (Wiese & Borgendale, 1986). Although initial e-mail-based digital reference efforts received little attention from patrons (Still & Campbell, 1993), digital reference services proliferated over time and became increasingly popular, eventually spawning such internationally-known services as AskERIC in 1992 and the Internet Public Library in 1995.

During the past several years, digital reference services have become important and effective resources for meeting the information needs of thousands of users, and the number of **user requests** to these service has continued to increase. In September of 1996, KidsConnect, a question-and-answer, help, and **referral** service for K-12 students on the Internet, experienced 1000% growth--from 20 questions a week to 200 questions per week (Lankes, 1998). With proper planning, AskA services can effectively manage high volumes of questions and prevent disruptions in service. Services that are launched prematurely, however, may not be prepared for the potential impact a global audience may have on their organizations.

IMPLICATIONS OF DIGITAL REFERENCE

The dynamic nature of the Internet creates an ever-changing information environment and transforms the way information is delivered and accessed. As greater numbers of users connect to the Internet, user expectations for more immediate access to information and knowledge resources steadily rises. While many organizations realize that their best response to shifting user demands is proactive rather than passive service (Cargill, 1992), the online environment can raise important issues for those interested in offering digital reference services.

The creation and maintenance of Internet-based question-and-answer services can be fraught with difficulties. AskA services often struggle with issues such as how to maintain consistent quality of service, which user populations to serve, and how to respond to question overload. The need to secure funding for continued operation also figures prominently in the building and maintaining of digital reference services. Many services devote much time to the pursuit of grants, corporate sponsorship, or non-profit status (Wasik, 1998). Despite such potential problems, organizations offering digital reference services find many rewards. AskA services serve the public good by providing valuable information in a timely fashion, and have the potential to gain international visibility. Parent organizations of many services reap enhanced public relations benefits by having satisfied users and by providing high-quality information. Accessible 24-hours a day and unrestricted by geography, digital reference services are a powerful means for the free exchange of information and the promotion of interactive learning.

A lack of information resources for practitioners of digital reference, however, has allowed many AskA services to go online without a clear understanding of either the process of digital reference itself or how to develop and manage such services effectively. Since many of these services

struggle and sometimes fail altogether, methods and standards have been proposed to ensure a consistent level of quality for digital reference and to provide guidance in the introduction of new services. Organizations interested in offering Internet-based information services must understand not only the fundamental tenets of the question-and-answer process, but also how this information is processed and translated into actual service.

HOW DIGITAL REFERENCE SERVICES WORK

Although there are slight variations among services, all digital reference and AskA services function in a similar manner. Human intermediaries evaluate incoming questions via e-mail or Web interface, and then decide on an appropriate course of action. New questions may be checked against an archive of previously answered questions for an appropriate answer, and if no suitable answer is found, passed along to an expert for answering. The expert supplies the necessary information, which may consist of an actual answer (factual information), pointers to additional resources (information **referral**), or some combination. Responses are sent to the user's e-mail address or posted to a Web site for the user to access at a later date. In some smaller AskA services, the experts themselves may also monitor the incoming questions.

The task of creating and managing Internet-based question-and-answer services is complicated by the ever-changing nature of the Internet. Lankes (1998**) examined exemplary K-12 AskA services to determine how such services answered questions, processed information, and operated in a highly complex online environment. Lankes identified five fundamental components that commonly exist in the methods used by digital reference services to answer questions, and which in turn form the basis of a conceptual framework, or "meta-description," of the question/answer process.

Services receive questions electronically (Question Acquisition), then **route** the questions to an appropriate expert according to a set of internal rules. The questions progress to a Pool of Possible Respondents, where they are queued according to some criteria, such as user need, date received, etc. In services staffed by multiple experts, some sort of triage may be initially performed to help expedite the answer process, such as selecting the best expert to answer a particular question. The expert composes an answer in compliance with service policy (Expert Answer Generation), and replies are sent to the users (Answer Sent). The final component of Lankes' meta-description, Tracking, identifies popular subjects and trends that may be used to compile statistics or generate archives.

Viewed in its entirety, the meta-description reveals a level of convergence in the volatile online environment. By identifying a set of common methods in the question/answer process, organizations may develop a series of planning documents to assist in the creation and ongoing maintenance of digital reference services.

BUILDING AND MAINTAINING DIGITAL REFERENCE SERVICES

Based on Lankes' meta-description, a six-step process was developed to aid organizations in the creation and operation of digital reference services (Lankes & Kasowitz, 1998). The AskA Starter Kit describes each of the six steps in a series of instructional modules. The information presented in the AskA Starter Kit is applicable to a wide variety of organizations and audiences including the K-12 education community, government agencies, libraries, and industry. The six stages are briefly outlined as follows:

1. Informing: Nascent AskA services conduct preliminary research both into the field of digital reference and into existing services in their area of

expertise.

2. Planning: AskA services' policies, procedures, and methods must be developed and evaluated to ensure alignment with overall organizational goals.

3. Training: The development of a comprehensive training plan, including training materials, activities, and tools, is necessary for the preparation of an effective staff.

4. Prototyping: Many digital reference services fail because they are launched prematurely. Services that are first pilot-tested in a controlled environment can identify and correct problems with minimal inconvenience.

5. Contributing: Upon launching an AskA service, it is important to institute the development of ongoing publicity and resource development to support the service.

6. Evaluating: As with any service, digital reference services benefit from regular evaluations to ensure a quality product and to gather data for continued support from the organization.

The six-step process reveals an overall methodology that many digital reference services do not employ. Due to inadequate planning and perhaps inexperience with Internet-based information delivery systems, many services experience question overloads and are often forced to cease operations as a result. Systematic planning and training such as that outlined in the AskA Starter Kit can help digital reference practitioners create robust, high-quality services.

In today's rapidly changing information environment, digital reference and AskA services are important tools that support learning and promote intellectual inquiry. The need for specialized training and information resources for digital reference providers has become increasingly critical as the popularity of such services continues to grow. Without proper planning and without an understanding of digital reference practices, many services will experience significant difficulties. New research and information resources, however, seek to promote standards and practices to ensure high-quality service, and the effective creation and maintenance of exemplary digital reference services.

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AskA Digests. [Online]. Available: http://www.vrd.org/AskA/digests.html [December 28, 1998].

Cargill, J. S. (1992). Electronic reference desk: Reference service in an electronic world. "Library Administration & Management," 6(2), 82-85. (EJ 444 784)

Whitwell, S. C. (1997). Internet Public Library: Same metaphors, new service. "American Libraries," 28(2), 56-59. (EJ 539 658)

Lankes, R. D. (1998). "Building and maintaining Internet information services: K-12 digital reference services." ERIC Clearinghouse on Information and Technology, Syracuse University, Syracuse, NY. (IR-106, ED number pending).

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Wiese, F. O. & Borgendale, M. (1986). EARS: Electronic access to reference service. "Bulletin of the Medical Library Association," 74(4), 300-304.

This Digest was prepared by Joann Wasik, Virtual Reference Desk Research Consultant and Communications Officer. jmwasik@vrd.org

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DESCRIPTORS: *Computer Mediated Communication; Computer System Design; Information Dissemination; Information Seeking; *Information Services; Internet; *Reference Services; Technological Advancement
IDENTIFIERS: *Digital Data; *Digital Technology; ERIC Digests; Question Answering

6/3,K/10 (Item 10 from file: 202)
DIALOG(R)File 202:Info. Sci. & Tech. Abs.

1802641
User assistance in bibliographic retrieval networks through a computer intermediary.
Author(s): Marcus, R S
Corporate Source: Lab. For Information & Decision Systems, Mit, Cambridge, Ma
IEEE Transactions on Systems, Man, and Cybernetics vol. SMC-12, no. 2 , pages 116-133
Publication Date: Mar.-Apr. 1982
ISSN: 0018-9472
Language: English
Document Type: Journal Article
Journal Announcement: 1800

...intermediary simplifies system operation by conversing with users in an easy-to-use, common language; **user requests** are translated into the language of the appropriate retrieval system, and after suitable network connections have been established, sent to that system. system responses are then **forwarded** to the user after conversion to a more uniform format. The design principles for such...

6/3,K/11 (Item 11 from file: 202)
DIALOG(R)File 202:Info. Sci. & Tech. Abs.

1203137
Approaches to the evaluation of library reference services.
Book Title: In Lancaster, F.w., Ed.; Cleverdon, C.w., Ed. Evaluation And Scientific Management Of Library And Information Centres. Proceedings Of The Nato Advanced Study Institute On The Evaluation And Scientific Management Of Libraries And Information Centres, Brist
Author(s): Bunge, Charles A
Corporate Source: Library School, University Of Wisconsin, Madison
Publication Date: 1975
Language: English
Document Type: Book Chapter
Journal Announcement: 1200

...subjective judgement, with the relative balance depending on the degree of expertise demanded by the **reference request** . Some attempts at cost-benefit analysis are described. Attention is given to "microevaluation" methods, including...

...library reference services is the inability or unwillingness of reference staff, and especially managers, to **assign** enough time to it. A successful program will usually involve multiple measures that are useful ...

6/3,K/12 (Item 12 from file: 202)
DIALOG(R)File 202:Info. Sci. & Tech. Abs.

1200227
"hotline" tested.

Library of Congress Information Bulletin vol. 35, no. 32, pages 451-453
Publication Date: August 1976
ISSN: 0041-7904
Language: English
Document Type: Journal Article
Journal Announcement: 1200

...call the library of congress on a newly-installed toll-free "hotline", for help with **reference requests** , after they have exhausted their own resources. The new telephone service will not duplicate or...

...by other parts of the library, such as the union catalog reference unit, the national **referral** center, or information and media services office. It will provide information on such things as...

6/3,K/15 (Item 15 from file: 202)
DIALOG(R)File 202:Info. Sci. & Tech. Abs.

0200146
Library-user communications on periodical literature.
Author(s): Bloomfield, M
Corporate Source: Culver City Library Of The Hughes Aircraft Company, Culver City, Cal.; Wilcox, H. E.
Special Libraries vol. 57, no. 8, pages 559-560
Publication Date: October 1966
ISSN: 0038-6723
Language: English
Document Type: Journal Article
Journal Announcement: 0200

...of regularly reproducing the tables of contents of 30 journals selected from 650 subscriptions, and **routing** these to technical personnel. Xerox copies of articles are supplied upon request made in person or via an electronic secretary, which tape records the **request** . **User** responses to the system have favorable. Expansion of services is planned.

6/3,K/17 (Item 2 from file: 1)
DIALOG(R)File 1:ERIC

00977383 ERIC NO.: ED410981 CLEARINGHOUSE NO.: IR056479
Partners in Learning, or Reference Service Unplugged.
Pereira, Monica
29pp.
May 1997 (19970500)
NOTES: Paper presented at the Annual Meeting of the Nebraska Library Association (Crete, NE, May 23, 1997).

...Sciences Library/Learning Resources Center has been transformed into a vibrant, information dissemination system. Maintaining **routine** reference skills and developing new ones is standard practice. The furious pace of demand for...

...the founding of the library in 1977; bibliographic instruction; lunchtime learning sessions and guest speakers; **reference requests** by e-mail; reference department use data; and staff cross-training.

Photographs of library facilities...

6/3,K/19 (Item 4 from file: 1)
DIALOG(R)File 1:ERIC

00728579 ERIC NO.: ED313054 CLEARINGHOUSE NO.: IR052961
Public Library Information and **Referral** Project, Phase II. Final Report.
Childers, Thomas; Krauser, Cheri;
CORP. SOURCE: Drexel Univ., Philadelphia, PA. Graduate School of Library Science. (BBB05820)
278pp.
June 1981 (19810600)
NOTES: For Phase I, see ED 310 775.
SPONSORING AGENCY: Office of Libraries and Learning Technologies (ED), Washington, DC. (EDD00020)

Public Library Information and **Referral** Project, Phase II. Final Report.

This study is the second of a two-phase survey of public library information and **referral** (I&R) service. In this phase, seven public libraries offering I&R services were studied...

...the following: (1) most I&R service consists of information provision, as opposed to actual **referral** ; (2) computerization itself is not the absolute determinant of the nature of the service delivered...
...upper socioeconomic strata; (7) the promotion of I&R invariably increases the volume of traditional **reference queries** ; and (8) staff seem to be generally positive toward I&R although often not in...
...DESCRIPTORS: Information Dissemination; *Library Services; Library Surveys; Needs Assessment; Outreach Programs; *Public Libraries; Questionnaires; Reference Services; * **Referral** ; User Needs (Information) ; *User Satisfaction (Information)

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S1        699   SUBJECT(N)(EXPERT? OR SPECIALIST?) OR DEPARTMENTAL()LIBRARY
S2        480   (REFERENCE OR CLIENT OR USER OR CUSTOMER)(N)(REQUEST? OR Q-
           UERY OR QUERIES)
S3      48981   ROUT? OR REROUT? OR FORWARD? OR REFERRAL OR REFERRING OR A-
           SSIGN?
S4          1   S1 AND S2 AND S3
S5         21   S2 AND S3
S6         21   RD (unique items)
File 202:Info. Sci. & Tech. Abs. 1966-2004/Nov 02
         (c) 2004 EBSCO Publishing
File 438:Library Lit. & Info. Science 1984-2004/Sep
         (c) 2004 The HW Wilson Co
File   1:ERIC 1966-2004/Jul 21
         (c) format only 2004 The Dialog Corporation
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12/3,K/3 (Item 3 from file: 202)
DIALOG(R)File 202:Info. Sci. & Tech. Abs.

1400749
The role of the urban main library in nine public library systems.
Book Title: 1978. 61 P. Edrs: Ed 153 632; Hc $3.50, Mf $0.83. Sponsored By Council On Library Resources, Inc., Washington.
Author(s): Bell, Elsie L
Publication Date: 1978
Language: English
Document Type: Book Chapter
Journal Announcement: 1400

...distributed among the branches and other extension services; 3) there is an emphasis on hiring **assigning** librarians with **subject expertise** to the main library, while the branch personnel are selected for their expertise in general...

...of new and replacement adult materials for the main libraries rests primarily with the department **heads** . A list of main and branch library functions concludes the report.

12/3,K/1 (Item 1 from file: 202)
DIALOG(R)File 202:Info. Sci. & Tech. Abs.

3501259
"Pushing" reference.
Author(s): McGlamery, Susan
Corporate Source: Metropolitan Cooperative Library System
vol. 15
Publication Date: 2000
Pages: 111-117
Conference Title: Proceedings of the Integrated Online Library Systems Meeting
Conference Location: New York, NY
Conference Date: May 17-18, 2000
Publisher: Information Today, Inc.
Language: English
Place of Publication: Medford, NJ
Document Type: Conference Paper
Journal Announcement: 3503

...assistance to remote users. Contact center software provides live interaction and collaborative tools, including call **routing** (to better network with **subject specialists** in remote locations) and collaborative browsing (allowing the reference librarian to guide the patron's... ...appropriate URLs). This project will purchase the Web contact center software, install it on a **central** server, and test it with a pilot group of public and academic libraries in Los...

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Set     Items   Description
S1        699   SUBJECT(N)(EXPERT? OR SPECIALIST?) OR DEPARTMENTAL()LIBRARY
S2        480   (REFERENCE OR CLIENT OR USER OR CUSTOMER)(N)(REQUEST? OR Q-
           UERY OR QUERIES)
S3      48981   ROUT? OR REROUT? OR FORWARD? OR REFERRAL OR REFERRING OR A-
           SSIGN?
S4          1   S1 AND S2 AND S3
S5         21   S2 AND S3
S6         21   RD (unique items)
S7         66   S1 AND S3
S8         65   S7 NOT S6
S9         63   RD (unique items)
S10        53   S9 NOT PY>2000
S11        52   S10 NOT PD>20000801
S12        12   S11 AND (CENTRAL? OR SUPERVIS? OR CHIEF? OR HEAD?)
S13        13   REFERRALS AND TELEPHONE AND REFERENCE AND LIBRAR?
S14        13   S13 NOT (S11 OR S6)
File 202:Info. Sci. & Tech. Abs. 1966-2004/Nov 02
         (c) 2004 EBSCO Publishing
File 438:Library Lit. & Info. Science 1984-2004/Sep
         (c) 2004 The HW Wilson Co
File   1:ERIC 1966-2004/Jul 21
         (c) format only 2004 The Dialog Corporation
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Set     Items   Description
S1        699   SUBJECT(N)(EXPERT? OR SPECIALIST?) OR DEPARTMENTAL()LIBRARY
S2        480   (REFERENCE OR CLIENT OR USER OR CUSTOMER)(N)(REQUEST? OR Q-
            UERY OR QUERIES)
S3      48981   ROUT? OR REROUT? OR FORWARD? OR REFERRAL OR REFERRING OR A-
            SSIGN?
S4          1   S1 AND S2 AND S3
S5         21   S2 AND S3
S6         21   RD (unique items)
S7         66   S1 AND S3
S8         65   S7 NOT S6
S9         63   RD (unique items)
S10        53   S9 NOT PY>2000
S11        52   S10 NOT PD>20000801
S12        12   S11 AND (CENTRAL? OR SUPERVIS? OR CHIEF? OR HEAD?)
S13        13   REFERRALS AND TELEPHONE AND REFERENCE AND LIBRAR?
S14        13   S13 NOT (S11 OR S6)
File 202:Info. Sci. & Tech. Abs. 1966-2004/Nov 02
         (c) 2004 EBSCO Publishing
File 438:Library Lit. & Info. Science 1984-2004/Sep
         (c) 2004 The HW Wilson Co
File   1:ERIC 1966-2004/Jul 21
         (c) format only 2004 The Dialog Corporation
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14/3,K/13 (Item 10 from file: 1)
DIALOG(R)File 1:ERIC

00226615 ERIC NO.: ED101735 CLEARINGHOUSE NO.: IR001593
Neighborhood Communications Centers: Planning Information and Referral Services in The Urban **Library** .
Yin, Robert K.; And Others;
CORP. SOURCE: Rand Corp., Washington, DC. (BBB07945)
62pp.
November 1974 (19741100)
SPONSORING AGENCY: John and Mary R. Markle Foundation, New York, NY. (BBB05600)

Neighborhood Communications Centers: Planning Information and Referral Services in The Urban **Library** .

The potential development of information and referral (I&R) services in branch **libraries** was explored by examining five cases where such services have been initiated. The extent to which the public **library** system is appropriate for information and referral services was carefully examined in the light of...

...carry on seven functions: (1) needs assessment, (2) development of the directory used to make **referrals** , (3) staffing, (4) publicity, (5) accessibility to users, (6) recordkeeping and follow-up, (7) relationship ...

...United States were chosen for the study. To a varying degree, each of four was **library** -affiliated; the fifth was not. **Library** sponsorship of I&R services was an asset from the standpoint of staffing, accessibility to ...

...of needs assessment, directory development, publicity, and record keeping. I&R services will necessitate extensive **telephone** use for **referrals** . It is anticipated that **libraries** will be able to make the adjustment. The study concludes with a discussion of possible...
DESCRIPTORS: *Branch **Libraries** ; Communication (Thought Transfer); *Community Information Services; Community Resources; Facility Utilization Research; *Feasibility Studies; Government Role; Information Centers; Institutional Role; * **Library** Services; Personnel Needs; *Public **Libraries** ; Publicize; **Reference** Services; Urban Areas

14/3,K/12 (Item 9 from file: 1)
DIALOG(R)File 1:ERIC

00465361 ERIC NO.: EJ256737 CLEARINGHOUSE NO.: IR509717
Resources at the Top: Answers and **Referrals** .
Morgan, Candy; And Others
RQ, v21 n1 p28-42 Fall 1981
1981 (19810000)

Resources at the Top: Answers and **Referrals** .

Contains papers presented at the Cooperative **Reference** Service Committee program during the 1981 ALA Annual Conference, including discussions of the **Library** of Congress **Reference** Correspondence Referral program, the University of Illinois Slavic **Reference** Service, the functions of the British **Library** Lending Division, and national-level cooperative **reference** services. (JL)
DESCRIPTORS: Academic **Libraries** ; **Library** Collections; * **Library** Cooperation; * **Library** Networks; * **Library** Services; National **Libraries** ; Public **Libraries** ; * **Reference** Services; *Referral; State **Libraries** ; **Telephone** Communications Systems
IDENTIFIERS: British **Library** (England); **Library** of Congress; Oregon State **Library** ; University of Illinois Urbana Champaign

14/3,K/11 (Item 8 from file: 1)
DIALOG(R)File 1:ERIC

00575975 ERIC NO.: ED249985 CLEARINGHOUSE NO.: IR050662
Measurement and Evaluation of **Reference** /Information Service in Law School Depository **Libraries** : A Bibliography.
Way, Kathy Ann
20pp.
February 1984 (19840200)

Measurement and Evaluation of **Reference** /Information Service in Law School Depository **Libraries** : A Bibliography.

...lists 159 books and journal articles on the measurement and evaluation of in-person and **telephone** **reference** /information services in academic, public, and special **libraries** , especially law school depository **libraries** . Subjects covered in the bibliography include the quality of **reference** /information services in terms of quantitative and qualitative measurement and evaluation by obtrusive and unobtrusive tests; standards for service performance; education for **reference** **librarians** in academic and on-site settings; continuing education for **librarians** ; the quality of **reference** /information service provided by **library** personnel possessing a Master of **Library** Science (MLS) or other advanced degree versus the quality of service provided by personnel without an advanced degree; **library** management considerations related to professional versus paraprofessional staffing; and **library** **referrals** and concomitant ethical considerations for **reference** /information services provided by law **libraries** to both the legal community and the lay public. (ESR)
DESCRIPTORS: Academic **Libraries** ; Community Information Services; *Evaluation; Government Publications; *Law **Libraries** ; **Librarians** ; **Library Education** ; * **Library** Services; **Library** Technicians; *Measurement; *Performance; Public **Libraries** ; * **Reference** Services; Standards

14/3,K/10 (Item 7 from file: 1)
DIALOG(R)File 1:ERIC

00583463 ERIC NO.: ED257473 CLEARINGHOUSE NO.: IR051141
Reference Services: Policies and Procedures.
Edwards, Anne G., Ed.; Ross, Betsy A., Ed.;
CORP. SOURCE: Missouri Univ., Columbia. Library. (BBB18576)
61pp.
August 1984 (19840800)

Reference Services: Policies and Procedures.

Prepared to provide guidance in the provision of **reference** service, this statement expresses the understanding between the **library** administration and the **Reference** Services Department of Ellis **Library** at the University of Missouri-Columbia concerning the manner in which the department's responsibilities...

...a manual for orienting new staff members, as well as a source of information for **reference** staff or **library** administrators. This manual covers the following: (1) **reference** services, including goals, ethics, and organization; (2) **library** users, including guidelines for providing special service; (3) priorities, including service to individual readers, instructional services, and subject specialists; (4) desk service, including a general statement, **telephone** inquiries, circulation of restricted materials, **referrals** , donations of books or periodicals, and assisting users at the card catalog; (5) bibliographic services, including those initiated by the **reference** department and direct user requests; (6) computer-assisted literature searching (LITQUEST), including staff requirements and the various services offered; (7) **reference** correspondence; (8) orientation and instruction; and (9) the **reference** collections. Appendices contain the American **Library** Association (ALA) Statement on Professional Ethics, an organization chart, the ALA Interlibrary Loan Code, Ellis **Library** Emergency Procedures, and Procedures for LITQUEST Searching. (THC)
DESCRIPTORS: *Academic **Libraries** ; Guidelines; Higher Education; Information Services; * **Library** Administration; **Library** Collections; **Library** Instruction; **Library** Personnel; * **Library** Services; Methods; Online Searching; Policy; Position Papers; * **Reference** Materials; * **Reference** Services

14/3,K/9 (Item 6 from file: 1)
DIALOG(R)File 1:ERIC

00636137 ERIC NO.: ED274379 CLEARINGHOUSE NO.: IR051700
Reference Manual. The University of Wisconsin-Milwaukee, The Golda Meir **Library** .
Belz, James; And Others;
CORP. SOURCE: Wisconsin Univ., Milwaukee. Golda Meir Library. (BBB24490)
38pp.
November 1984 (19841100)

Reference Manual. The University of Wisconsin-Milwaukee, The Golda Meir **Library** .

Designed for the **reference** staff at the Golda Meir **Library** , University of Wisconsin-Milwaukee, this manual functions as a guide to insure a uniform standard of service, to explain the duties and responsibilities of the **reference** staff, and to provide step-by-step explanations of how a variety of procedures are performed. The purpose of the **reference** room is explained, the goals and ethics of the **reference** service are set forth, and the **referrals** policy is discussed. Detailed policies and procedures are presented for three areas: (1) **Reference** Department Staffing-- **librarians** , **library** interns, information/microform student employees, other student employees, and civil service employees; (2) **Reference** Services--information desk, **reference** desk, mail requests, **telephone** service, interlibrary loan, database services, microforms area, bibliographic instruction, special services, and services not provided; and (3) **Reference** Collection--general collection policy, specific collection policies, location policies, and handling procedures. (KM)
DESCRIPTORS: Academic **Libraries** ; Higher Education; * **Library** Administration; * **Library** Collection Development; **Library** Instruction; * **Library** Personnel; * **Library** Standards; **Library** Technical Processes ; *Policy; * **Reference** Services; Referral

14/3,K/7 (Item 4 from file: 1)
DIALOG(R)File 1:ERIC

00787265 ERIC NO.: EJ448931 CLEARINGHOUSE NO.: IR524969
Guidelines for Medical, Legal, and Business Responses at General **Reference** Desks.
RQ, v31 n4 p554-55 Sum 1992
1992 (19920000)

Guidelines for Medical, Legal, and Business Responses at General **Reference** Desks.

Presents American **Library** Association guidelines for medical, legal, and business responses at general **reference** desks covering the role of the **librarian** , including interpretation, advice, confidentiality, and tact; sources, including currency and **referrals** ; **telephone** or mail **reference** ; and ethics. (MES)
DESCRIPTORS: Confidentiality; Ethics; Guidelines; *Information Sources; **Librarians** ; **Library Associations** ; * **Library** Role; * **Library** Services ; * **Reference** Materials; * **Reference** Services; Referral; User Needs (Information)
IDENTIFIERS: American **Library** Association; Business Information; Health Information; Legal Information; * **Library** Policy; **Telephone** **Reference**

14/3,K/4 (Item 1 from file: 1)
DIALOG(R)File 1:ERIC

01078269 ERIC NO.: ED450805 CLEARINGHOUSE NO.: IR058075
Unobtrusive Evaluation of **Reference** Service and Individual Responsibility: The Canadian Experience. Contemporary Studies in Information Management, Policies, and Services.
Dilevko, Juris
221pp.
2000 (20000000)

Unobtrusive Evaluation of **Reference** Service and Individual Responsibility: The Canadian Experience. Contemporary Studies in Information Management, Policies, and Services.

Long a controversial topic in the specialized world of **reference librarianship** , unobtrusive evaluation is a useful tool in gauging the degree to which **reference librarians** are effectively performing their jobs. Based on a nationwide survey of government documents **reference** service in Canada, This book examines the broad philosophical implications of negative attitudes to unobtrusive evaluation studies within **libraries** . It also discusses what really happens when **librarians** make **referrals** to external sources. It suggests overlooked ways that may help **reference librarians** deliver better **reference** services, and argues that such proposals as certification and re-certification of **reference librarians** need to be seriously considered if **librarians** do not willingly take personal responsibility for improving their own knowledge levels. Chapter 1 presents a brief philosophical discussion about some implications of unobtrusive **reference** service evaluation. Chapter 2 is an extensive discussion of the results of the unobtrusive evaluation of government documents **reference** service in Canada. Chapter 3 focuses on the proxies themselves and what they experienced at depository **libraries** as they asked their questions. Chapter 4 examines in detail responses to the questions asked by the proxies. Chapter 5 traces the often sinuous path of many of the **referrals** proxies received to their original questions. Chapter 6 looks at the value of reading newspapers for **library reference** personnel through another unobtrusive study of the quality of **telephone reference** service in large Canadian public **libraries** . Finally, Chapter 7 offers a series of recommendations for improving the quality of **reference** service in **libraries** . Presented throughout the text are 54 figures and tables. Includes author and subject indexes. (Contains...
DESCRIPTORS: Certification; Evaluation Criteria; Foreign Countries; Government Publications; Information Services; *Job Performance; * **Librarian** Attitudes; * **Librarians** ; **Library Education** ; **Library** Personnel; **Library** Science; **Library** Services; **Reference** Services; Standards

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Set     Items   Description
S1         53   (REFERENCE(N)(DESK? OR LIBRARIAN? OR SERVICE?))(3N)(SUBJEC-
               T? OR TOPIC)(N)(EXPERT? OR SPECIALIST?)
S2         41   RD (unique items)
S3         31   S2 NOT PY>2000
S4         31   S3 NOT PD>20000801
File   1:ERIC 1966-2004/Jul 21
         (c) format only 2004 The Dialog Corporation
File   6:NTIS 1964-2004/Nov W2
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
File   7:Social SciSearch(R) 1972-2004/Nov W2
         (c) 2004 Inst for Sci Info
File  47:Gale Group Magazine DB(TM) 1959-2004/Nov 19
         (c) 2004 The Gale group
File 148:Gale Group Trade & Industry DB 1976-2004/Nov 19
         (c)2004 The Gale Group
File 202:Info. Sci. & Tech. Abs. 1966-2004/Nov 02
         (c) 2004 EBSCO Publishing
File 438:Library Lit. & Info. Science 1984-2004/Sep
         (c) 2004 The HW Wilson Co
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4/3,K/29 (Item 4 from file: 202)

2601727
Faculty research profile created for use in a university library.
Author(s): Richardson, J M
Corporate Source: Arizona State Univ., Tempe, AZ
Journal of Academic Librarianship vol. 16, no. 3, pages 154-157
Publication Date: Jul 1990
ISSN: 0099-1333
Language: English
Document Type: Journal Article
Journal Announcement: 2600

...methodology used to create this database is discussed, as are its various uses for library **subject specialists**, **reference librarians**, and collection development staff. Methods to link ASU's existing collection development policy statement and...

4/3,K/6 (Item 6 from file: 1)
DIALOG(R)File 1:ERIC

00353788 ERIC NO.: EJ192847 CLEARINGHOUSE NO.: IR506268
Increasing the Reference Librarian's Participation in the Research Process.
Gunning, Kathleen
Journal of Academic Librarianship, v4 n4 p216-17 Sep 1978
September 1978 (19780900)

Reference librarians with **expertise** in a **subject** area and in information retrieval see research problems in terms of the current state of...

4/3,K/3 (Item 3 from file: 1)
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The Virtual Reference Desk: Building a Network of Expertise for America's Schools. White Paper.
Lankes, R. David
15pp.
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IDENTIFIERS: Intermediaries; **Subject Specialists** ; *Virtual **Reference Desk**